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ABSTRACT

Only in the last several years have state curriculum guides become prominent in education reform discourse and policy. This paper focuses on the organization and content of curriculum guides in four states regarded as leaders in education reform--Florida, Texas, California, and New York--in an effort to develop a way of comparing and contrasting various state approaches to the design of such documents. The review focuses on the rationales and degrees of prescriptiveness in secondary education curriculum guides for mathematics and social studies. A conclusion is that state leadership in education reform is not well served by curriculum guides that embody no clear rationale or standards. Clear, detailed, and well -organized guides may be an effective instrument of reform if they are part of a coherent policy framework. However, to have impact, they must have curricular validity in the eyes of local educators. The state must also provide significant support and incentives. The question of whether guides can substantively improve curriculum and instruction remains unanswered. Four figures and a list of state curriculum resources are included. (LMI)

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CONSORTIUM FOR POLICY RESEARCH IN EDUCATION

On the Design and Purposes of State Curriculum Guides:

A Comparison of Mathematics and Social Studies Guides from Four States

Doug Archbald

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April 1994

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Biography

Doug Archbald is an assistant professor in the Educational Leadership and Policy Program of the department of educational development at the University of Delaware. His research interests include school reform, curriculum and assessment policy, and magnet schools and desegregation policy. Dr. Archbald works with several state education reform projects in Delaware, focusing on issues related to performance assessment in the area of mathematics.

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Introduction

Only in the last several years have state curriculum guides become prominent in education reform discourse and policy. Accountability testing, restructuring initiatives, school choice, teacher education reforms, and other efforts captured the education reform limelight for most of the 1980s. Traditionally, efforts to promote adherence to and monitor compliance with curriculum guides have been minimal.

Recent developments, however, portend a rise in the status and influence of state curriculum guides, which are becoming important instruments of state policy. This paper focuses on the organization and content of curriculum guides in four states regarded as leaders in education reform—Florida, Texas, California, and New York—in an effort to develop a way of comparing and contrasting various state approaches to the design of such documents. The review also suggests implications for guide construction and design.

The mid-1980s state-led education reforms obviously were key in strengthening the role of state education agencies in curriculum (Cuban 1987, Reilly and Gersh 1988). According to Kirst (1987, p. 49), "[having] lost confidence in the ability of local authorities to provide high quality curricula, . . . the solution was a more precise state curricular role that would raise local academic aspirations and create a higher minimum statewide standard." State education agencies nationwide rewrote curriculum guides—or wrote them for the first time—making them more prescriptive and more mandatory (Council of State Social Studies Specialists 1986; Firestone, Fuhrman, and Kirst 1989; Pipho 1991).

A set of national curriculum reports issued in 1989 have helped further strengthen state efforts to reform and regulate curriculum. The science and math reports include:

- *Everybody Counts* (National Research Council)
- *Science for All Americans* (American Association for the Advancement of Science)
- *Curriculum and Evaluation Standards for School Mathematics* (National Council of Teachers of Mathematics, NCTM)

Recent reports in social studies include:

- *Building a History Curriculum: Guidelines for Teaching History in Schools* (Bradley Commission on History in Schools)
- *Curriculum Guidelines* (National Council for the Social Studies)
- *Charting a Course: Social Studies for the 21st Century* (National Commission on Social Studies in the Schools)

These reports, as well as reports in other subjects, are being used by state curriculum committees to add rationales, content, and authority to state curriculum guides. (See Rothman 1989 and Lewis 1990 for commentaries on the new curriculum initiatives.)

Recent advocacy of "systemic" school reform also seems destined to focus attention on state curriculum guides. State education reforms often have been criticized for exerting contradictory and counterproductive influences on schools and classrooms (Cohen 1990). In systemic reform, the state takes a lead role in curriculum guidance because of its constitutional authority for public education, its resources, and its capacity to mobilize action on many policy fronts and on a multidistrict level. State curriculum guides figure prominently in this view. "The state would design and orchestrate the implementation of a coherent instructional guidance system. The cornerstone of the system would be a set of challenging and progressive curriculum frameworks" (Smith and O'Day 1991, p. 261). In systemic reform, state curriculum guides would provide the curricular vision behind teacher training, instructional materials development, student assessment, and other policies that impact directly on the curriculum.

As state curriculum guides become a stronger force in education reform, the issue of whether there is a curriculum vision behind education reform policies becomes increasingly important (Newmann and Clune 1992). Ideally, state curriculum guides can unify disparate policies and agencies around curricular purposes. To do this, they must become state-of-the-art documents—useful, inspiring, and effective.

Given that almost all states have curriculum guides of one form or another, and given that pressures for state and national leadership in curriculum reform continue to mount, there is surprisingly little research on state curriculum guides. Precisely what purposes state curriculum guides are intended to serve and how they are to be used by local educators has received remarkably little attention. Currently, there are no agreed-on models to design or evaluate state curriculum guides, and there is no clear consensus on how design relates to purpose. Cantlon, Rushcamp, and Freeman (1991), however, show two models (accommodation/compromise and compliance/augmentation) that reflect how district curriculum guides respond to the prescriptions of state curriculum guides.

This paper describes features of design, content, and purpose of curriculum guides developed by four key reform states: Texas, California, New York, and Florida. These states are significant because all passed major education reform bills in the mid-1980s, substantially revised their curriculum guides, and made curriculum reform a state policy priority. Collectively, these four states enroll about one-third of the nation's public school students. For other treatments of reform in these states see Brooks (1991, New York); Fuhrman (1988, California, Florida); McNeil (1987, Texas); Marsh and Rowan (1988, California); Timar and Kirp (1987, Texas and California); Shujaa and Richards (1989, California, Florida). For more detail on the entire system of education policies in these states, see A. Tyree (1991).

One of my purposes is to examine characteristics of the organization and content of guides from these four states. However, it is important not only to document outcomes of curriculum policy decisions in these states, but also to reflect on curriculum design issues that must be confronted by decision-makers in all states intending to initiate curriculum reform.

This analysis focuses on the guides' rationales and prescriptiveness—two features of curriculum policy guides important in curriculum research and theory. Theoretically, a rationale should accomplish at least two objectives:

- Explain the guides' purposes in the context of state education goals.
- Define the educational purposes of prescribed subject matter.

The second feature I examine, "prescriptiveness," concerns the level of organization and detail of content within the guides. [See Hartoonian (1986) for a treatment of the role and content of rationales in curriculum guides. He argues that a rationale should make explicit "assumptions about the nature of the discipline or subjects to be studied, the needs and potential of society, and the concept of 'human being'" (p. 8).]

The concluding section of this paper discusses implications of differential prescriptiveness for local curriculum decision-making and practice. Because there is no agreement on "optimal prescriptiveness," my treatment of this question is necessarily speculative.

To narrow the scope of the task, I review only secondary education curriculum guides for mathematics and social studies. Examining two subjects instead of one provides for useful subject matter contrasts and gives a broader picture of the guides' content (Stodolosky 1988).

The Guides' Rationales

Each of the four states revised and expanded its curriculum guides as part of broader reforms to raise standards and establish a common core of curriculum content. There is considerable variation in how the guides' functions and curriculum goals are explained in a rationale to the curriculum specialists and teachers who are expected to use them. (For a list of curriculum guides and frameworks discussed here, see "State Curriculum Resources" following the "References.")

Three of the four states—Texas, California, and New York—have included rationales in their guides. Figures 1 and 2, using "number of pages" as the measure, give an indication of the relative coverage devoted to the rationale in each of the guides. (Because a page usually contains a standard amount of text, the "pages" measure is a rough but useful comparative indicator of the depth and detail of a rationale.) Florida's guide, the *Florida Curriculum Frameworks for Grades 9-12*, consists entirely of lists of course topics and objectives and does not include rationales. On the other hand, in 1984 Florida's state education agency developed *Student Performance Standards of Excellence for Florida Schools in Mathematics, Science, Social Studies, and Writing* (grades 3, 5, 8, and 12). However, this document is not included in the analyses because it is not technically a curriculum guide. It lists fifty-two grade-12 performance standards for mathematics (e.g., "Compute the area and perimeter of regular and irregular polygons") and forty-four for social studies (e.g., "Develop alternative solutions to problems created by geographic variables"). How these standards are intended to guide curriculum or instruction is unclear, although, apparently, they are intended to be used eventually as the basis of a state test.

Figure 1

Length of Math Guides' Introductory and Purpose Statements

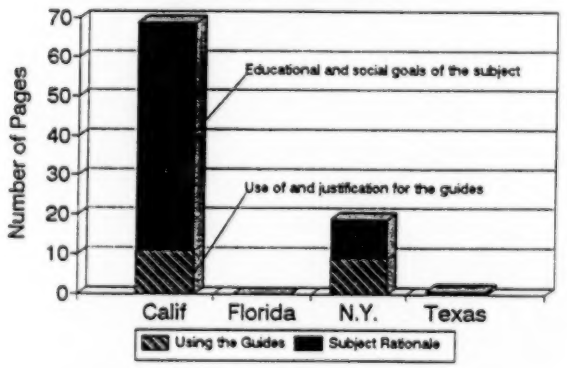
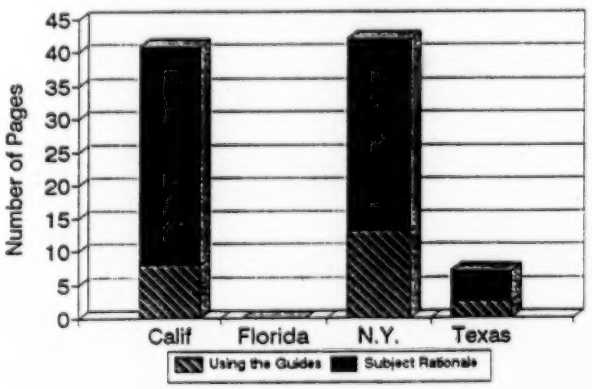


Figure 2

Length of Social Studies Guides' Intro. and Purpose Statements



Texas

The Texas Mathematics Framework, K-12 rationale is relatively brief, just over one page. After a few introductory comments, the guide identifies problem-solving as a priority:

> The program deliberately focuses on solving problems and teaching for understanding.... Our rapidly changing technological society requires students to go far beyond the limits of what has been traditionally taught in mathematics classrooms. To have the opportunity to exercise higher-order thinking skills in emerging fields in the future, Texas students must have education today that prepares them to use all of the problem-solving tools and strategies available (pp. 3, 4).

This introduction is followed by several general statements stressing the importance of using estimation, calculators, and computers in problem-solving. The philosophy of the grade 9-12 mathematics program is to "provide a sequence of courses that will prepare students for daily mathematics applications as well as for future vocational needs" (p. 93). Specific goal statements are relegated to the guide's course content guidelines.

The Texas Social Studies Frameworks are succinct and direct about the problems the guides are intended to address—low achievement and excessive curriculum variation.

> The passage of HB 246 reflected widespread concern about curriculum. Curriculum inadequacies were reflected in poor student achievement on such test measurements as the Scholastic Aptitude Test (SAT) and the [state test].... The former curriculum had become overcrowded with a variety of topics, leaving confusion and uncertainty about what was of critical importance for teachers to teach and for students to learn. Areas covered within subjects and courses varied considerably from district to district, campus to campus, and classroom to classroom. Educators feared that wide variations in the curriculum, given the presence of a highly mobile population, limited student access to basic and consistent curriculum (p. 1).

The next section of the rationale devotes three pages to a description of social studies goals in three categories: Acquiring Knowledge, Developing Attitudes and Values, and Developing Skills and Processes.

California

California differs from the other states in that it has a K-12 framework for each subject area and a document for secondary education called *Model Curriculum Standards, Grades Nine Through Twelve* that covers social studies, mathematics, and two other subjects.

Both the *Mathematics Framework* and the *History/Social Science Framework*, as well as the *Model Curriculum Standards*, have lengthy rationales. California's *Model Curriculum Standards* begins with a problem statement similar to those found in recent national reform reports. It discusses growing international economic competition, changing job requirements, and the need for a citizenry more effectively prepared for participation in government. This problem statement includes a section entitled "Rationale for an Academic Program," which advocates a common, academic curriculum and a broader conception of literacy, one that goes beyond the basics to require cultural literacy and higher-order thinking skills.

California's rationale also refers to the role of the guides in a larger curriculum reform process involving new approaches to assessment, raised graduation requirements, a more stringent textbook review program, and strengthened preservice and inservice training for teachers and administrators. Overall, California's rationale conveys a sense of urgency and mission and a national orientation not found in the other states' guides.

California's Model Curriculum Standards and Mathematics Frameworks refer to the notion of "mathematical power," which is meant to encompass competence in mathematical problem-solving and the use of tools (e.g., calculators and computers), and mathematical confidence.

California's mathematics guides allocate more pages to mathematics purpose/rationale statements than to descriptions of course content. The guides advocate that all students experience a common mathematics curriculum likened to the "visible spectrum," which has color bands without distinct boundaries. Mathematics is divided into seven strands: number, measurement, geometry, patterns and functions, statistics and probability, logic, and algebra.

The guides' seven strands are described in moderate depth in both the *Model Curriculum Standards* and the *Frameworks*. The *Model Curriculum Standards* provide more detail, and include a section called "applications" describing a variety of thought-provoking mathematics projects.

California's History/Social Science Framework reflects the department of education's advocacy of placing history at the center of the social sciences. The rationale states:

> History and geography are the two great integrative studies of the field.... Throughout this curriculum, the importance of the variables of time and place, when and where, history and geography, is stressed repeatedly (p. 4).

Twenty-four pages of rationale precede the course descriptions.

The social studies guides also suggest that current practice in history instruction needs to be revised. "This Framework emphasizes the importance of studying major historical events and periods in-depth as opposed to superficial skimming of enormous amounts of

material" (p. 5). The *Model Curriculum Standards*, which also emphasizes history, begins with a problem statement that includes admonitions about instruction in history too often becoming "lifeless and useless...a tool of discipline to impose memorization of arbitrary facts" and not conveying adequately "the fragility of democracy" and the responsibilities that come with freedom (p. HS-1). In addition to other rationale statements, the *Model Curriculum Standards* includes a set of specific guidelines for implementing reform in the social studies curriculum.

Like the Texas guides, the History/Social Science Framework identifies and discusses three broad goals of social studies:

- Knowledge and cultural understanding (historical literacy, ethical literacy, cultural literacy, geographic literacy, economic literacy, sociopolitical literacy);
- Democratic understanding and civic values (national identity, constitutional heritage; civic values, rights, and responsibilities); and
- Skills attainment and social participation (basic study skills, critical thinking skills, participation skills) (p. 11).

New York

New York, unlike the other states, has written a separate guide for each course. Each mathematics and social studies guide has lengthy and relatively elaborate rationales—lengthier in social studies than in mathematics (see Figures 1 and 2). These rationales consist primarily of hierarchical groupings of educational goals and objectives and explanations and justifications of the organization of units, topics, concepts, and activities in the course content guidelines. There is no explicit reform orientation or statement about problems with existing practice.

The Mathematics Guides for the state-prescribed college preparatory mathematics courses (for the New York Board of Regents exam)—covering logic, algebra, geometry, analytic geometry, probability, and statistics—feature rationales with three main sections:

- An "Introduction" gives an overview of the guide, recommendations for use, and changes since the previous edition.
- "Goals and Objectives" includes Regents goals for elementary and secondary students, College Board goals from "Academic Preparation for College," and a set of affective, content, and process goals.
- "The Role of Problem Solving" argues that problem solving is essential for economic and political strength in our society and that it should be an integral part of each math unit.

New York has two additional guides for general mathematics and business mathematics. The rationales are less detailed, and, in contrast to the Regents syllabi, do not give prominence to problem-solving. Related to this subject, the "General Mathematics" guide suggests that "student proficiency and understanding be major aims when these units are taught, with minor concern devoted to how many of these units are covered." It also states:

> Whenever possible, the usage of extensive rigor and formalized definitions be avoided. For many students, formality of structure tends to be completely uninteresting and cumbersome, yet it is believed that the student who does continue on to algebra will be capable of the transition to a more formalized structure.

Social Studies Guides have been developed for each of the four social studies courses required of all students: global studies (grades 9-10), U. S. history and government (grade 11), economics (grade 12, one semester), and participation in government (grade 12, one semester). These guides' rationale sections can be divided into two parts.

- An "Introduction" discusses values of individual rights, civic responsibility, and democracy, and describes fifteen "overarching concepts" that recur throughout the grades 7-12 sequence and build on ten overarching concepts in the K-6 social studies program: change, choice, citizenship, culture, diversity, empathy, environment, human rights, identity, interdependence, justice, political system, power, scarcity, and technology. The Introduction also gives "how to" information about the guides and explains the conceptual organization of the units.

- Following the Introduction are fifteen pages of goal statements, beginning with overall Board of Regents Elementary and Secondary Education Goals, such as: "Each student will learn methods of inquiry and knowledge gained through the following disciplines and use the methods and knowledge in interdisciplinary applications" (p. 4).

The Board's general education goals are followed by a set of social studies goals broken down by subject. For example, in geography, "The student will be able to analyze the effects of geography on the development of cultures." A separate twelve-page section lists "process" goals (five broad abilities, each introduced with a short rationale, divided into twenty skill categories, each skill including a number of objectives).

Key Differences and Implications

Among the three states that include rationales in their state guides (California, Texas, and New York), there is considerable variation in how they address their purposes. Although subject rationales (i.e., "Why study history?") are supplied in the guides,

rationales for reform and for the curriculum guides' purposes in that reform receive considerably less attention, with the exception of California.

California's guides are relatively clear about the reforms they seek: less drill and practice in mathematics, less memorization of arbitrary facts in social studies. A purpose of California's guides, as described in their rationale, is to promote a common core of academic content for all students. This is especially evident in the mathematics guides' "seven strands" of mathematics content for all students and in their advocacy of a "common core" of learning about history (historical literacy), and specifically, the common core of content described in the guides' history-based social studies curriculum.

Texas's social studies guides are explicit, but very brief about their reform goals: reducing variability in content across courses of the same name in different schools and districts and raising achievement. The guides, however, are not specific about what form higher achievement should take, only that the intent is to improve student achievement by upgrading the curriculum.

Texas's mathematics guides and New York's guides in both subjects do not refer specifically to reform nor to inadequacies of existing practice. However, both states' mathematics guides give problem solving special emphasis. Although we might infer from this emphasis that reform in mathematics education is needed, simply endorsing problem solving without identifying shortcomings in prevailing practice presents a somewhat incomplete case for reform.

In each of the three states, social studies rationales are longer and more elaborate than mathematics rationales (more lists and categories of educational and subject matter goals). Unlike mathematics, with its emphases on problem solving, estimation, probability, statistics, and calculators, social studies does not present a clear set of overriding reform goals in the guides' rationales. This reflects greater disagreement nationwide concerning the role and goals of social studies in secondary education (see Porter, Archbald, and Tyree 1990; Lewis 1990; Viadero 1990). Although each of the states has introduced changes in particular social studies courses, these changes are not explicitly emphasized as "social studies reforms."

Common across the state guides in social studies is a traditional classification of social studies goals. Each state guide places citizenship training at the center of the social studies enterprise, and further divides social studies goals into categories of knowledge (historical, geographical, political, sociological facts and concepts), skills/processes (social science inquiry and participation skills), and values (valuing democracy, participation, human dignity, etc.).

The Argument for a Curriculum Reform Rationale

Arguments for including rationales in state curriculum guides can be made on at least three grounds. First, state curriculum officials lack the positional and traditional authority to issue unilateral and unexplained directives. In education, state requirements and recommendations confront powerful norms of school district autonomy and teacher professionalism. The American tradition of local control, although weaker now than in the past, still creates a presumption requiring an explanation for tighter curriculum control by state authorities. So, too, do professional norms. Although there is disagreement over the level of control curriculum professionalism requires, no one disputes that teachers individually and as a group should have a say in what is taught and how to teach it. Because state curriculum guides supplant to some degree school- and classroom-level curriculum decisions, a rationale is necessary.

Second, a system-level curriculum rationale facilitates *system-level* change. Effective state leadership requires building a common definition of curriculum needs. A clear and compelling curriculum rationale increases the probability of coherent action within and among schools and districts by working toward a consensus on reform needs. Because change agents are likely to encounter a welter of competing notions of what curriculum reforms are needed, a clear and cogently expressed vision of needs and goals is essential to make curriculum deliberations productive and to promote "buy in" (Walker 1990). A detailed study of policy influences on elementary school mathematics has shown that teachers' interpretations vary markedly. The researchers observed:

> Virtually every teacher studied has had his or her mathematics instruction influenced in important ways by one or more school policy. Yet the effects of content policies have not standardized teacher practice. Perhaps because the content policies are not as prescriptive as they might be, or strong in other ways, teachers interpret policies differently (Porter et al. 1988).

Third, state curriculum guides should make clear their role in integrating state curriculum policy, which, as a system, should be designed to support exemplars of practice conceived in the curriculum guides. Curriculum committees should be knowledgeable about and try to build linkages between curriculum guides and other education policies. For instance, teacher training institutions in the state might use the guides in teachers' preservice courses, and incentives could be created to encourage purchase and adoption of materials compatible with the guides' goals. Not only should different state policies be consistent with each other, but this consistency should also be evident to practitioners to demonstrate state support for clear and coherent goals (Smith and O'Day 1991).

The Prescriptiveness of Course Content Guidelines

What design features make course content guidelines useful to the practitioners, the local curriculum planners and teachers? Two key dimensions of curriculum content guidelines that merit attention are the organization and specificity—the "prescriptiveness"—of the curriculum content.

In the organization of course content guidelines, a nonsequenced list of topics is minimally prescriptive. Specified sequences (of topics or objectives) are more prescriptive. Guides that organize content sequentially *and* hierarchically (broader goals and/or concepts subsuming more specific topics and objectives) are the most prescriptive. The degree of specificity at which topics and objectives are written is the second variable determining the prescriptiveness of course content guidelines. The statements of goals, topics, and objectives and the use of examples to illustrate standards are important factors shaping specificity.

Although all four states view the guides as instruments to raise standards and improve the quality of course content, each guide reflects different assumptions about optimal prescriptiveness for controlling curriculum. Each state prescribes a comprehensive set of goals and topics for every course described in its guides. As is suggested by the notable differences in the amount of text each state devotes to course content (see Figure 3), prescriptiveness varies enormously. The Florida and Texas guides are relatively nonprescriptive; the California and New York guides are more prescriptive and very differently organized from those of Florida and Texas, and from each other as well. As indicated by Figure 4, Florida and Texas have developed a greater number of content guidelines than have either California or New York.

Figure 3

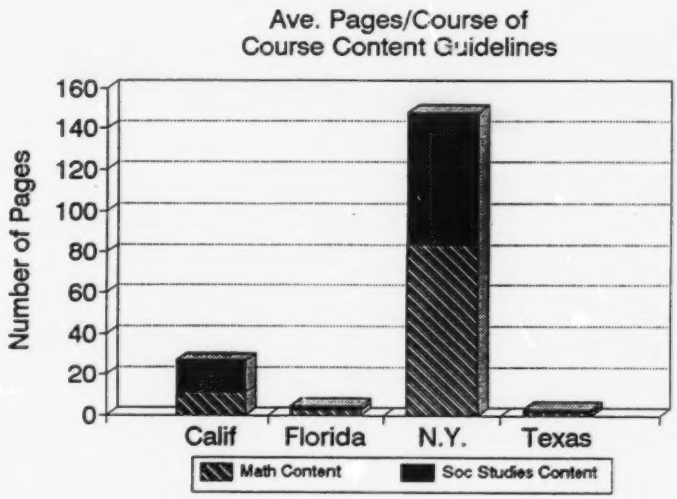


Figure 4 Courses Listed With Content Guidelines in the Four States' Guides

CALIFORNIA-MATHEMATICS

Math A
"Number/Measurement" in MCS*
Math B
Math C
Algebra I
"Algebra" in MCS
Geometry
"Geometry" section in MCS
Algebra II
"Patterns/Functions" in MCS
Math Analysis
Linear Algebra
Probability & Statistics
"Probability/Statistics" in MCS
"Logic" in MCS
"ProblemSolving Applications" in MCS

CALIFORNIA-SOCIALSTUDIES

9th Gr. S.S.
U.S. Hist.& Geog.
World Hist/Cult.
Am. Govt./Civics
Economics

*MCS refers to the "9-12 Model Curriculum Standards" in California. These do not prescribe content for specific mathematics courses. Content for grades 9-12 mathematics is divided into 7 sections in the MCS: Number, Measurement, Geometry, Patterns and Functions, Probability and Statistics, Logic, and Algebra.

FLORIDA-MATHEMATICS

Basic Math
Applied Basic Math
Fundamental Math I
Fundamental Math II
General Math I
General Math II
General Math III
Consumer Math
Computer Math I
Computer Math II
Computer Math III
Business Math I
Business Math II
Pre-Algebra
Algebra I
Algebra I Honors
Algebra II
Algebra II Honors
Linear Algebra
Abstract Algebra
Liberal Arts Math
Integrated Math
Probability & Stats
Math Studies
Informal Geometry
Geometry
Geometry Honors
Analytic Geometry
Trigonometry
Math Analysis
Calculus
AP Calculus AB
AP Calculus BC
Multivariate Calculus
Differential Equations

FLORIDA-SOCIAL STUDIES

Intro World Hist
World Hist
Adv World Hist
World Hist-Pre-IB
Western Civ
Latin Amer Hist
Hist of Americas-IB
African Hist
Asian Hist
Contemporary Hist
Contemporary Hist-IB
European Hist
AP European Hist
Florida Hist
Intro Amer Hist
Amer Hist
Adv Amer Hist
Amer Hist-IB
Intro Amer Govt
Amer Govt
Adv Amer Govt
Amer Govt-Pre-IB
Law Studies
Comparative Political Systems
AP Amer Govt/Political Science
AP Comparative Govt/Political Science
International Relations
Political Science
Intro Econ
Econ
Adv Econ
Comparative Econ Systems
Comparative Econ Systems-Pre-IB
Anthropology
Future Studies
Psychology I & II
Psychology-IB
Philosophy
Analytic Philosophy
Bible Hist: Old & New Testament
Sociology
World Religions

NEW YORK-MATH

General Math
Business Math
Course I
Course II
Course III

NEW YORK-SOCIAL STUDIES

Global Studies 9
Global Studies 10
US Hist. & Government 11
Participation in Government 12
Economics and Economic Decision Making 12

TEXAS-MATHEMATICS

Fundamental Math
Consumer Math
Pre-Algebra
Informal Geometry
Algebra I
Algebra II
Geometry
Trigonometry
Elem. Analysis
Analytic Geometry
Pre-Calculus
Consumer Economics
Computer Math I
Computer Math II
Probability & Stats
Calculus
Number Theory
Linear Algebra
Linear Programming
History of Math
Survey of Math
Adv. Business Math

TEXAS-SOCIAL STUDIES

Soc. Studies Elective
US History
World History
World Geography
US Government
Advanced Texas Studies
American Culture Studies
World Area Studies
Advanced Soc. Science Problems
Psychology
Sociology
Economics With Emphasis On Free Enterprise System And Its Benefits

The following discussion draws examples and excerpts from Algebra 1 and U. S. history to facilitate comparisons of the guides' prescriptiveness. Because a given state's guides treat courses in standard fashion (i.e., each course description follows the same format), I cite examples from only one course in each subject area.

Florida and Texas

The Florida and Texas course content guidelines in both Algebra 1 and U.S. history have a similar two-level organization of goals: Learning objectives (about twenty to forty per course) are grouped under more general goals, and sequencing is minimal. Florida's goals are called "Intended Outcomes"; Texas's, "Essential Elements."

Algebra 1 Guidelines in both Florida and Texas are organized such that specific objectives (e.g., factor perfect square polynomials) are grouped under broader ones (e.g., factor polynomials). In both states' guidelines, mathematics objectives tend to follow a traditional building-block, more-simple to more-complex sequence.

U. S. History Guidelines in Florida are organized such that 10 goals encompass 38 learning objectives. For example, one goal reads: "The student will be able to understand how contemporary American society depends upon contributions of past societies and cultures." It includes the following objectives:

The student will:

1.01—explain the contributions of the Civil War Period to contemporary America.

1.02—explain the contributions of the Industrial/Urban Period to contemporary America.

1.03—explain the contributions of the period of emerging world leadership to contemporary America.

1.04—explain the contributions of the Depression/New Deal to contemporary America (p. 4).

Texas's goals and objectives are similar to Florida's in style and substance, but there are fewer of them and they are more general. U. S. history, for instance, has five "Essential Elements" encompassing thirty-two "Sub-elements" (compared with Florida's, ten and thirty-eight, respectively).

Neither Florida nor Texas sequences history objectives chronologically; rather, the states organize the objectives by themes, such as the one stated previously.

As is evident, neither of the state's guides prescribes content with much specificity. Goals and objectives contain verbs such as "explain," "analyze," and "understand"; no precise explanations or examples illustrate standards.

California

The Course Content Guideline for Algebra 1 in California's Mathematics Framework is very brief (less than a page), with six desired skill outcomes and fifteen topic areas in a traditional algebra sequence. In contrast, California's second guide, the *Model Curriculum Standards*, rather than prescribing content for particular courses (e.g., Algebra 1), divides mathematics content into seven "strands," of which "algebra" is one. These strands prescribe content in detail (relative to the *Frameworks* and to Florida's and Texas's guidelines). For instance, "algebra" is given a nine-page section on "concepts" and "problem-solving," with many numerical examples to illustrate objectives. An additional ten-page section provides clear, practical examples of applications of algebra.

Because the *Model Curriculum Standards* do *not* prescribe content by course (e.g., prealgebra, Algebra 1, Algebra 2, etc.), but by mathematics "strands" (mentioned previously), guidance about what content to cover in *particular courses* must come from the *Frameworks*. However, these course topic specifications are written at a fairly general level.

U. S. History in the Model Curriculum Standards, written in 1985, is organized into five categories (each of which include multiple goal statements):

- Important Chronological Elements
- The Historical Development of the United States Government Politics, and Public Policy
- Growth and Change in America: Economic and Social Development
- American Character and Values: Some Formative Elements
- Skills

These categories encompass a total of thirty-seven goals for the U. S. history course. In turn, these goals each include approximately eight additional themes and/or topics.

The *History/Social Science Framework*, written in 1988, uses a much simpler chronological organization for U. S. history, with major themes and topics presented in a narrative style. The *Frameworks* recommends a chronological study of U. S. history beginning about 1900, after a review in two units entitled "The Nation's Beginnings" and

"The United States to 1900." (Early U. S. history is emphasized in the *Framework's* 8th grade history course.) California's guides are considerably more specific on topics and goals than are those of Florida and Texas, which do not go beyond one-sentence prescriptions per topic. For instance, consider the topic "The Great Depression." The *Model Curriculum Standards* state six specific points about the Great Depression. The *History/Social Science Framework* devotes almost a page of narrative to the Great Depression. Its causes, character, and significance are summarized and model learning activities are recommended.

New York

New York's Mathematics Guides use an elaborate hierarchical and sequential organization of topics. For instance, Course 1 from New York's 3-course integrated mathematics sequence is divided into six approximately ten-page sections—logic, algebra, geometry, analytic geometry, probability, and statistics. Each of these sections covers multiple topics and each topic covers multiple subtopics. For instance, in the algebra section, one of the four topics, "Operations on Algebraic Expressions," includes:

- Review of operations with signed numbers
- Use of variables
- Addition of polynomials
- Multiplication of polynomials
- Simplification of algebraic expressions using addition and multiplication
- Division of polynomials by polynomials
- Factoring

Finally, these subtopics often contain additional, more specific concepts and principles. Thus, the mathematics guides are *highly* prescriptive because there is a four-level hierarchy of topics in a suggested sequence. (The New York State guides for Business Mathematics and General Mathematics, although similarly prescriptive, do not have the same conceptual scheme for organizing content.)

In mathematics (algebra), the topic "multiplication of polynomials" has several specific objectives with numerical examples, such as:

> Students should be able to multiply two binomials. Special attention should be given to the square of a binomial and to the product of conjugate binomials.

$(a + b)^2 = a^2 + 2ab + b^2$
$(a + b)(a - b) = a^2 - b^2$

EXAMPLES:
$(x + 2)(2x - 3) = 2x^2 + x - 6$
$(3x - 1)^2 = 9x^2 - 6x + 1$
$(2x + 3)(2x - 3) = 4x^2 - 9$

On "multiplication of polynomials," Texas's Algebra 1 guide states: "The student shall be provided opportunities to add, subtract, multiply, and divide polynomials." Florida's states: "The student will perform the four basic operations with polynomials." New York's guides are the *only* ones that provide specific examples of concepts and achievement goals for *each* of the topic areas prescribed in the guides.

New York's Social Studies Guides are similarly organized and equally prescriptive. The *U. S. History and Government* guide begins with a two-page introduction, followed by a list of eight knowledge, five skill, and seven attitude objectives of the course. The next eighty pages are divided into six chronologically sequenced units.

Each unit has a Unit Goal and consists of either two or three subunits. For instance, *Unit 4*, "At Home and Abroad: Prosperity and Depression, 1917-1940," is divided into two subunits—War Economy and Prosperity (1917-1920) and The Great Depression—and each subunit has three to five subunit objectives (e.g., "To evaluate the effects of war on a nation's economy and on various groups"). Altogether, there are sixteen subunits in the U. S. history guide. Content for each subunit is presented in three columns: "Content Outline," "Major Ideas," and "Model Activities."

Concerning specificity, in many instances New York's social studies guides allocate three to five pages (with goals, skills, major ideas, model activities, and unit projects) to topics covered in a sentence in the Florida and Texas guides.

Key Differences and Implications

Each of the states' guides is sufficiently prescriptive to create guidelines for teachers or local curriculum specialists to follow in deciding what general topics to include in or exclude from particular courses. Also, the possibility exists of creating greater statewide uniformity of course content at a broad "topic" level. However, the state guides vary tremendously in how specifically topics are described.

The guides from Texas and Florida allow, in most cases, only general topic selection decisions. Thus, there might be more topic-level commonality of course content among teachers following the guides than among teachers ignoring them; but for each topic there is much room for interpretation by individual users, especially in social studies. For instance, Texas's guidelines prescribe for 11th grade U. S. history topics such as "uses,

abuses, and preservation of natural resources" and "the development of the U. S. banking system" (along with thirty-two others). Clearly, these goal/topic statements would mean different things to different people.

Inferring standards from the Florida and Texas guides is difficult because of the lack of clear and specific definitions of achievement. For instance, covering "uses, abuses, and preservation of natural resources" in U. S. history can be accomplished by a twenty-minute lecture or a multiweek, in-depth project. Even a seemingly specific topic like "perform the four basic operations with polynomials" can be treated in very simple or very complex ways. The guides' prodigious use of process verbs, such as "analyze," "compare," "synthesize," and "evaluate," may encourage local users to stress analytical thinking, but these verbs leave considerable room for interpretation.

Given the high degree of interpretation allowed in the Texas and Florida guides, consistent effects of the guidelines are likely to be limited (even under "optimal" assumptions of local willingness to follow state curriculum guides). Conceivably, students taking the same course in different schools would be more likely to cover common topics. From some policy perspectives, this might be enough. However, it is difficult to envision that the Texas and Florida guides would be a significant agent for improving rigor or pedagogy.

California's guides present a different situation. Although the guidelines for mathematics course content in California's *Frameworks* are no more prescriptive than those of Florida or Texas, both California's *Frameworks* and the *Standards* have an *extensive* rationale elaborating a philosophy of mathematics built on principles elaborated in the NCTM *Standards*; and the guides provide numerous examples illustrating standards of achievement. The rationale is explicit in challenging conventional notions that "problem-solving" must go well beyond typical end-of-chapter word problems or plugging numbers into a formula to "solve for *x*." (The other states' guides do not address this.) California's guides make a case for change in conventional practice and provide dozens of examples for each of the seven strands of mathematics to illustrate standards of achievement.

In social studies, California's *Frameworks* (1988) and the *Model Curriculum Standards* (1985) are organized quite differently, and complement each other less well than do the *Frameworks* and *Standards* in mathematics. (Some changes in social studies curriculum philosophy occurred between the writing of the 1985 *Standards* and the 1988 *Frameworks*.) Although both the *Frameworks* and the *Standards* prescribe chronological sequencing of content, the *Frameworks* focuses on more recent history (with review of key events and ideas from early history, covered in earlier grades); and the *Standards* prescribe coverage of the full span of recorded history (early to present). Hence, unlike the case in mathematics, California's *Frameworks* and *Standards* cannot genuinely be considered two parts of a coherent statement about the subject's content. Nonetheless, the *Standards* do provide much detail (key persons, events, interpretations) to add to the portion of history (late 1800s to present) the two guides have in common for high school courses.

The case made for curriculum *reform* in California's guides complicates the guides' purpose of promoting a more common curriculum for all students. If the guides sought only to promote more uniformity of topics across courses, a more common curriculum might be achieved. However, the guides call for substantial and challenging reforms, inviting resistance and disagreement from some local educators; well-intentioned, but badly implemented changes by others; and multiple variations on themes of successful improvement among still others. Ultimately the guides may contribute to *increased variation* in content within and among schools and districts (see Porter et al. 1988, EEPA 1990). Eventually, though, a *net shift* in curriculum toward state-prescribed standards may occur.

New York's guides are by far the most detailed of the four states. In both mathematics and social studies, the guides present sequenced, hierarchically arranged topics provide numerous definitions and examples of achievement goals, and include recommended pacing schedules.

New York's guides are sufficiently detailed to provide clear instructional guidance to local users. However, New York's guides have ambitious goals, difficult to achieve through traditional lecture/textbook-dominated modes of topic coverage. The implications of this are the same as those described earlier for California's guides: the ability and willingness of practitioners to change curriculum in accordance with state curriculum prescriptions will vary, and thus produce varying degrees of instructional change both within and among schools. New York's Regents Exams (statewide course-end examinations based on the state syllabi), however, are very influential in shaping curriculum and instruction, especially toward the end of the course, in the weeks when teachers begin to prepare students specifically for their exams. Prior to the year-end reviews and preparations, teachers have much flexibility in teaching the particulars of course content prescribed in the guides.

Arguments for Clarity and Detail in State Curriculum Guides

There is no single formula for the format, organization, or detail of state curriculum guides. The great variation in the rationales and prescriptiveness of the state's guides testifies to the lack of consensus concerning their optimal design. It seems clear, though, that state leadership in education reform is not well served by curriculum guides that embody no clear rationale or standards and that can mean very different things to different people. Such guides are superfluous at best, and possibly dysfunctional because they perpetrate a misconception of state curriculum guidance.

Clear, detailed, and well-organized curriculum guides may be an effective instrument of reform if they are part of a coherent policy framework. Systemic reform assumes that state leaders must have clear curricular goals and build a state policy structure in alignment with those goals. Guides can present a form of mission statement unifying the actions of the state education agency, school districts, and teacher training institutions. Using such mission statements and goals implies substantial changes in state policies, teacher preparation, educational materials, and assessment instruments. Peters and Waterman (1982) show how effective organizations consistently are able to articulate a clear and distinctive "organizational mission." This is similar to the effective schools theory, which espouses clear goals and strong instructional leadership (Brookover et al. 1979, Edmonds 1979, Rutter et al. 1979). The National Policy Board for Educational Administration (NPBEA 1990) emphasizes that school and district administration must be driven much more by curriculum goals.

This view of state leadership is provocative, but it must be more systematically explored. The handful of studies that have examined state curriculum guides suggests they can contribute to local curriculum planning and shape content decisions, although the conditions under which state guides exert influence and the specific nature of effects remain unclear. Traditions of local control, principles of school-based management, and norms of teacher autonomy all tend to support predispositions to disregard or comply minimally with curriculum guides from state agencies. Thus, it is reasonable to assume that to be influential, state guides must have curricular validity in the eyes of local educators, and the state must provide significant supports and incentives for using the guides.

One study, based largely on teacher survey ratings, concluded: "Using curriculum frameworks, assessment, textbook selection and technical assistance in a highly coordinated and conceptually coherent fashion powerfully affects the quality of instruction" (Armstrong, Davis, Odden, and Gallagher 1989, p. vi). The study also found effects either to be positive or neutral; that is, users found the guides helpful, or they ignored them, but the guides caused no problems. Another survey study of effects of state and district curriculum policies found that curriculum guides received ratings at the

"moderate influence" level, on a scale of 1 to 4 ("no," "minor," "moderate," "major influence"). Teachers were asked to rate the influence of a number of policy factors "in determining the content (information, concepts, skills) of your [mathematics or social studies] course" (as reported by Archbald and Porter 1991, in a study involving a sample of 191 teachers from twelve high schools in California, Florida, and New York).

Although these studies indicate that curriculum guides can be influential, the important question remains unanswered: Can state curriculum guides substantively *improve* curriculum and instruction? Even though guides may readily influence teachers' topic choices and may promote greater uniformity of course content, this form of influence falls well short of the more pervasive curriculum reforms advocated by organizations of curriculum professionals and other recent reform reports.

Widespread, substantive curriculum improvement will require strong policy support—the forms of support and coherence envisioned in models of systemic reform—but this model requires a high level of systemic rationality. Whether state policymaking systems can achieve this level of rationality remains to be seen. The politics of elections and interest groups pose formidable obstacles to the consensus on standards and the sustained goal-directed activity implied in curriculum-driven reform.

A state curriculum task force, for instance, caused a stir recently when it aimed charges of bias and miseducation at New York's social studies curriculum (Commissioner's Task Force on Minorities 1989, p. iii) and elicited a rejoinder from the state commissioner and a group of historians (Viadero 1990). In California, textbook publishers lobbied to change California's K-8 adoption policies, which favor textbooks that are in alignment with California's *Frameworks*. The companies wanted to avoid having to write special books for the California market. (See McNeil 1987 for a description of the politics of education reform in Texas.)

Overcoming political disagreement is just one obstacle. Resource constraints and limits on technical knowledge about policy effectiveness are other obstacles. This paper cannot review all the potential obstacles to coherent curriculum guidance from the state education agency. Even though justification, resources, and theory guide state-level curriculum reform, it will be a bumpy road to the realization of visions of mathematical power, historical literacy, and other worthy educational goals for the '90s. State curriculum guides can be useful instruments in achieving state goals only if they clearly express the goals and are part of a clear and coherent plan to support teachers and students.

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